Amendments to the Specification

Please amend the paragraph at Page 1, lines 18 through 23, and Page 2, lines 1 through 12, as follows:

The considerable part of concrete in world building practice is used for road construction, and problem of coarse aggregates for concrete is urgent for road construction industry. Crushed granite is a universal coarse aggregate for concrete, but it constitutes only 15% of ~~US~~ U.S. production of coarse aggregates. High cost and shortage of crushed granite requires ~~the~~ solutions allowing reduction of this coarse aggregate in road construction. One of these solutions is composite concrete pavement ~~with~~ designed according to the Portland Cement Association Engineering Bulletin (Thickness Design for Concrete Highway and Street Pavements, Portland Cement Association, EB109P). To reduce the consumption of normal concrete with crushed granite as a coarse aggregate, [[it]] EB109P provides a design of composite pavement of lean concrete subbase ~~and/~~or lower layer of modulus of rupture in the range from 150 psi to ~~450psi~~ 450 psi. The sense of composite pavements is in ~~the~~ replacing ~~of~~ a part of normal concrete by a subbase or ~~lover~~ lower layer of cheaper concrete. An ~~The~~ increase of flexural strength of the subbase ~~and/~~or ~~lover~~ lower layer of composite concrete pavement is very efficient. It results in a ~~the~~ reduction of thickness of the normal concrete surface course ~~coarse~~. ~~The~~ An increase in ~~of~~ the value of modulus of rupture of lean concrete of subbase from 150 psi to ~~450psi~~ 450 psi means the increase of equivalent normal concrete thickness of composite concrete pavement at least by

15% with the possibility of a corresponding reduction of thickness of the normal concrete surface coarse. The ~~Strength~~ strength and cost of lean concrete is determined mainly by coarse aggregate. Local or recycled aggregates are used usually for lean concrete, resulting in cost saving and conservation of high-quality aggregates.

Please amend the paragraph at Page 2, lines 13 through 19, as follows:

SUMMARY OF THE INVENTION

The use of cheap small grains coarse aggregates is ~~the~~ one of the ways of obtaining [[of]] lean ~~and not only lean~~ concrete. Small grains crushed limestone is one of the cheapest aggregates. According to the ~~US~~ U.S. Geological Survey, crushed limestone constitutes 71% of total weight of coarse aggregates for concrete product in the USA. This product of grading finer than ~~9.5mm~~ 9.5 mm usually is not used as a coarse aggregate. It constitutes from ~~10~~ 10% to 20% of the total volume of limestone quarrying. Utilization of great deposits of crushed limestone finer than ~~9.5mm~~ 9.5 mm and especially finer than ~~4.75mm~~ 4.75 mm are urgent for the aggregate industry.

Please amend the paragraph at Page 2, lines 20 through 22 as follows:

~~The~~ An object of the design of composite concrete pavements is to obtain the highest concrete strength of subbase ~~and~~ or lower layer of this pavement with the cheapest coarse aggregate and ~~the~~ moderate consumption of cement.

Please amend the paragraph at Page 2, lines 24 and 25, through Page 3, lines 1 through 7, as follows:

The most important object of the present invention is to obtain concrete with coarse aggregate as a processed by-product of regular sizes of crushed limestone manufacture defined as enriched limestone waste. Grading of this aggregate in the aggregate bin of the concrete plant is intermediate between coarse and fine aggregates in Terminology of ASTM C125. The values of specified compressive strength and modulus of rupture of this concrete should amount up to 5,000 psi and more than 750 psi, respectively. Compressive and flexural strength of concrete with this coarse aggregate should be higher or at least close to that for concrete of the same consumption of cement and twice as high consumption of admixture with crushed granite of regular sizes as a coarse aggregate.

Please amend the paragraph at Page 2, lines 15 through 20, as follows:

The main advantage if the present invention is that ~~the feasibility~~ of obtaining ~~of~~ concrete with the values of specified compressive strength and modulus of rupture up to 5,000 psi and more than 750 psi, respectively, using the processed by-product of manufacture of crushed limestone of regular sizes. It does not require excessive consumption of cement; the amount of consumed cement for this concrete is less than or at least close to that for concrete of the same compressive and flexural strength with crushed granite of regular sizes as a coarse aggregate.

Please amend the paragraph at Page 3, lines 21 through 25, and Page 4, lines 1 and 2, as follows:

Yet another important advantage ~~the of~~ of the present invention is the possibility to use limestone quarry waste as a coarse aggregate of concrete instead of high-quality aggregate. It allows very profitable utilization of great deposits of crushed limestone finer than ~~9.5mm~~ 9.5 mm usually estimated as limestone quarry waste and especially aggregate finer than ~~4.75mm~~ 4.75 mm. In so doing, the volume of utilized aggregate finer than ~~4.75mm~~ 4.75 mm should ~~constitutes~~ constitute at least 1/3 of the volume of utilized aggregate finer than ~~9.5mm~~ 9.5 mm. Utilization of limestone waste enables ~~to reduce~~ reduction of quarrying of high-quality aggregate with a corresponding conservation of the environment.

Page 4, line 3, remove ~~SUMMARY OF THE INVENTION~~

Please amend the paragraph at Page 4, lines 4 through 17, as follows:

Concrete with coarse aggregate defined as enriched limestone waste of grading intermediate between coarse and fine aggregates in Terminology of ASTM C125 is characterized by the specified compressive strength and modulus of rupture (MR) of concrete up to 5,000 psi and more than 750 psi, respectively. This aggregate is a processed by-product of the manufacture of crushed limestone of regular size ~~Sizes number~~ numbers 56, 57, 6, and 67 with the rated dimensions 25-9.5 mm, 25-4.75 mm,

19-9.5 mm, and 19-4.75 mm, respectively. The aim of enrichment of limestone quarry waste is the reduction of small sizes of grains. Enrichment of this aggregate should be carried out by washing or screening, or by the combination of washing and screening. Method of enrichment depends on the grading of aggregate and should be selected by economic reasons.

Please amend the paragraph at Page 4, lines 18 through 25, as follows:

Limestone quarry waste as a raw material for enrichment should be finer than ~~9.5mm~~ 9.5 mm but coarser than ~~4.75mm~~ 4.75 mm. The amount of aggregate finer than 4.75 mm (Sieve ~~No.4~~ No. 4) before enrichment should be at least the value of the same order as for the least ~~Size~~ size of coarse aggregate number 89 according to ASTM C33 and it should be not less than 1/3 of the total weight of aggregate. After enrichment, the main part of aggregate finer than ~~4.75mm~~ 4.75 mm should be coarser than ~~2.3mm~~ 2.3 mm. The amount of aggregate finer than 2.36 mm (Sieve No. 8) should not exceed about 10%; the amount of aggregate finer than ~~1.18mm~~ 1.18 mm (Sieve No. 16) should not exceed about 7%; the amount of aggregate finer than 300μm (Sieve No. 50) should not exceed about 2%.

Please amend the paragraph at Page 5, lines 7 through 16, as follows:

Concrete of specified compressive strength and modulus of rupture up to 500 psi and more than ~~750psi~~ 750 psi, respectively, with enriched limestone waste as coarse

aggregate is very cheap and efficient. It is considerably cheaper than concrete with crushed granite of regular sizes as a coarse aggregate of the same compressive and flexural strength and can be used for civil and industrial construction as well as for road construction. The use of this concrete for composite concrete pavement means considerable reduction of initial cost of construction of this pavement and increase competitiveness as compared with asphalt pavement. Moreover, this concrete can be very efficient for lean concrete subbase of asphalt pavement. Since ~~damages of~~ damage to asphalt pavements depends on the capacity of its subbase it allows a reduction of maintenance cost of these pavement with an insignificant increase in ~~of~~ initial cost of construction.

Please amend the paragraph at Page 5, lines 17 through 20, as follows:

Use of concrete with this coarse aggregate allows very profitable utilization of great deposits of crushed limestone finer than ~~9.5mm~~ 9.5 mm usually estimated as limestone quarry waste and especially of aggregate finer than ~~4.75mm~~ 4.75 mm. In so doing, the volume of utilized aggregate finer than ~~4.75mm~~ 4.75 mm should ~~constitutes~~ constitute at least 1/3 of the volume of utilized aggregate finer than ~~9.5mm~~ 9.5 mm.

Please amend the paragraph at Page 6, lines 8 through 18, as follows:

Limestone quarry waste is a by-product of manufacture of crushed limestone of regular sizes, mainly numbers 56, 57, 6 and 67 of the rating dimensions 25-9.5 mm, 25-

4.75 mm, 19-9.5 mm, and 19-4.75 mm, respectively. As a raw material for enrichment, it should be finer than 3/8 in. (9.5 mm) and coarser than ~~4.75mm~~ 4.75 mm (Sieve ~~No.4~~ No. 4). The proportion ~~Proportion~~ between the amount of aggregate finer and coarser than ~~4.75mm~~ 4.75 mm before enrichment is very important; the problem of utilization of aggregate finer than 4.75 mm is more urgent than that for part of this by-product coarser than ~~4.75mm~~ 4.75 mm. Moreover, aggregate finer than 4.75 mm is considerably cheaper than the part of this by-product coarser than ~~4.75mm~~ 4.75 mm. According to the invention, the amount of aggregate finer than 4.75 mm at the quarry before enrichment should be at least the value of the same order as that for the least size ~~Size~~ of coarse aggregate number 89 according to the ASTM ~~C 33~~ C33 and not less than about 1/3 of the total weight of aggregate.

Please amend the paragraph at Page 6, lines 19 through 26 and Page 7, lines 1 through 8, as follows:

The proportion ~~Proportion~~ between the amount of aggregate finer and coarser than ~~4.75mm~~ 4.75 mm before enrichment should be determined taking into account an inevitable breakdown of this aggregate due to dry enrichment by screening and especially due to transportation of this aggregate to the concrete plant. The breakdown of aggregate is caused by weather conditions (rain, frost, thawing) and handling of this aggregate (loading, discharge and other actions during transportation from the quarry to the aggregate bin of the concrete plant). Due to the influence of the scale effect, this

breakdown relates mainly to the portion of aggregate coarser than ~~4.75mm~~ 4.75 mm. As a result, the amount of aggregate finer than ~~4.75mm~~ 4.75 mm in the aggregate bin of the concrete plant can be considerably higher than at the quarry. The amount of this fraction in the aggregate bin of the concrete plant should be close to, but not ~~to~~ exceed, 2/3 of the total weight of aggregate. Transportation of very vulnerable enriched limestone waste of 10% ~~10 percents~~ ~~water absorption~~ water absorption from the quarry to the concrete plant under adverse weather conditions results in the doubling of the amount of aggregate finer than ~~4.75,mm from~~ 4.75 mm from 1/3 to 2/3 of the total amount of aggregate. Less ~~water absorption~~ water absorption of aggregate and actual reduction of the quantity of adsorbed water means less breakdown of aggregate and more similar proportions between amounts of aggregate finer and coarser than ~~4.75mm~~ 4.75 mm at the quarry and in the aggregate bin.

Please amend the paragraph at Page 7, lines 9 through 14, as follows:

Enrichment of this by-product can be carried out by washing or screening, or by a combination of washing and screening separately for parts finer and coarser than ~~4.75mm~~ 47.5 mm with consequent mixing of these parts or without this separation. The aim of enrichment of limestone waste is reduction of small size grains and to obtain the desirable proportion between the parts of aggregate. The choice of method of enrichment depends on the results of sieve analysis of this aggregate, ~~water absorption~~ water absorption of aggregate, and required grading of aggregate after enrichment.

Please amend the paragraph at Page 7, lines 15 through 24 as follows:

Due to the enrichment of limestone waste, the amount of small sizes ~~Sizes~~ of grains at the quarry should be reduced. The amount of aggregate finer than 2.36 mm (Sieve No. 8) should not exceed about 10%[[,]]; the amount of aggregate finer than ~~1.18mm~~ 1.18 mm (Sieve No. 16) should not exceed about 7%[[,]]; the amount of aggregate finer than 300μm (Sieve No. 50) should not exceed about 2%. The main part of aggregate finer than ~~4.75mm~~ 4.75 mm should be coarser than ~~2.36mm~~ 2.36 mm. The amount of aggregate coarser than ~~4.75mm~~ 4.75 mm after enrichment should be higher than 1/3 of the total weight of aggregate, and this excess is determined by the volume of inevitable breakdown of aggregate during the transportation to the aggregate bin of the concrete plant. There are requirements of the present invention for control of grading of enriched limestone waste as a coarse aggregate for concrete at the quarry after enrichment.